Patent Claims

1. A transceiver for a transmission and reception signal which can be transmitted via a signal line having a particular line impedance (Z_{LINE}), having:

a) a line driver (6) for driving a transmission signal via the signal line and having

b) an analog echo cancellation filter (15) for signal suppression for an echo signal brought about by the transmission signal,
characterized
in that the line driver (6) has a synthesized output impedance (R_{SYN}), with the line driver (6) having a downstream hybrid circuit (11) for connecting an analog echo cancellation filter (15).

2. The transceiver as claimed in claim 1,
characterized
in that the analog echo cancellation filter (15) is programmable.

3. The transceiver as claimed in claim 2,
characterized
in that the transfer function of the echo cancellation filter (15) has a programmable pole point and a programmable zero point.

4. The transceiver as claimed in claim 1,
characterized
in that the line driver (6) is of differential design.

5. The transceiver as claimed in claim 1,
characterized
in that the synthesized output impedance (R_{SYN}) of the line driver (6) is real.

6. The transceiver as claimed in claim 1, characterized in that the hybrid circuit (11) has a first two-pole connection (10a, 10b) next to the output of the line driver (6), a second two-pole connection (12a, 12b) for connection to the signal line, and a third two-pole connection (14a, 14b) for connection to the analog echo cancellation filter (15).

7. The transceiver as claimed in claim 6, characterized in that the first connection (10a, 10b) on the hybrid circuit (11) and the second connection (12a, 12b) on the hybrid circuit (11) have series resistors (R1, R1') between them which are connected in series with the line impedance (Z_{LINE}) of the signal line.

8. The transceiver as claimed in claim 6, characterized in that the first connection (10a, 10b) on the hybrid circuit (11) and the second connection (12a, 12b) on the hybrid circuit respectively have a first and a second series-connected crosscoupling resistor (R2, R2', R3, R3') between them.

9. The transceiver as claimed in claim 6, characterized in that the third two-pole connection (14a, 14b) on the hybrid circuit (11) for connecting the echo cancellation filter (15) is tapped off between the series-connected crosscoupling resistors (R2, R3', R2', R3).

10. The transceiver as claimed in claim 6, characterized

in that the resistance values of the resistors connected in the hybrid circuit (11) satisfy the following equation:

$$R2 = R3 \cdot \frac{R_{SYN}}{R1 + R_{SYN}}$$

where R1 is the resistance value of a series resistor,
R2 is the resistance value of the first crosscoupling resistor, and
R3 is the resistance value of the second crosscoupling resistor, and
where R_{SYN} is the synthesized output impedance of the line driver (6).

11. The transceiver as claimed in claim 6, characterized
in that the resistors (R1, R1', R2, R2', R3, R3') connected in the hybrid circuit (11) are real resistors.

12. The transceiver as claimed in claim 6, characterized
in that the hybrid circuit (11) is of symmetrical design.

13. The transceiver as claimed in claim 1, characterized
in that a reception filter (22) is provided for filtering a signal received via the signal line.

14. The transceiver as claimed in claim 1, characterized
in that a subtraction circuit (19) is provided which subtracts from the filtered output signal from the reception filter (22) the transmission signal simulated by the echo cancellation filter (15) in order to generate a reception signal which has been liberated of the echo signal.

15. The use of the transceiver as claimed in claim 1 for a broadband communication system, particularly for an xDSL broadband communication system.